## **CLAIMS**:

1. A backscatter communication system comprising:

an interrogator including a transmitter configured to output a forward link communication and a receiver configured to receive a return link communication having a carrier signal, the receiver being configured to reduce the amplitude of the carrier signal of the return link communication; and

a communication device configured to modulate the carrier signal to communicate the return link communication responsive to reception of the forward link communication.

- 2. The backscatter communication system according to claim 1 wherein the communication device comprises a radio frequency identification device.
- 3. The backscatter communication system according to claim 1 wherein the communication device comprises a remote intelligent communication device.
- 4. The backscatter communication system according to claim 1 wherein the carrier signal comprises a continuous wave signal.
- 5. The backscatter communication system according to claim 1 wherein the interrogator comprises a coherent interrogator.

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6. The backscatter communication system according to claim 1 wherein the transmitter is configured to apply a local continuous wave signal to the receiver, and the receiver is configured to receive the local continuous wave signal, adjust the amplitude and phase of the local continuous wave signal to provide an adjusted continuous wave signal, and sum the adjusted continuous wave signal with the return link communication.

7. The backscatter communication system according to claim 6 wherein the receiver is configured to match the amplitude of the local continuous wave signal with the amplitude of the return link communication.

## 8. A backscatter system interrogator comprising:

a receiver configured to receive a return link communication comprising a modulated continuous wave signal comprising a radio frequency continuous wave signal having a first frequency and a modulation signal having a different frequency, the receiver being further configured to reduce the amplitude of the return link communication at the frequency of the radio frequency continuous wave signal.

- 9. The backscatter system interrogator according to claim 8 further comprising a transmitter configured to output a forward link communication, the radio frequency continuous wave signal and a local continuous wave signal.
- 10. The backscatter system interrogator according to claim 9 wherein the receiver and transmitter are coherent.
- 11. The backscatter system interrogator according to claim 9 wherein the receiver is configured to receive the local continuous wave signal, adjust the amplitude and phase of the local continuous wave signal to provide an adjusted continuous wave signal, and sum the adjusted continuous wave signal with the modulated continuous wave signal.
- 12. The backscatter system interrogator according to claim 11 wherein the receiver is configured to match the amplitude of the local continuous wave signal with the amplitude of the modulated continuous wave signal.
- 13. The backscatter system interrogator according to claim 9 wherein the transmitter and receiver are configured to communicate with a radio frequency identification device.



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14. A coherent backscatter system interrogator comprising:

a transmitter configured to communicate a wireless forward link communication, a wireless continuous wave signal and a local continuous wave signal; and

a receiver configured to receive the local continuous wave signal from the transmitter and wireless return link communications comprising modulated continuous wave signals, the receiver being configured to reduce the amplitude of the return link communications using the local continuous wave signal received from the transmitter.

- 15. The coherent backscatter system interrogator according to claim 14 wherein the transmitter and receiver are configured to communicate with a radio frequency identification device.
- 16. The coherent backscatter system interrogator according to claim 14 wherein the receiver is configured to receive the local continuous wave signal, adjust the amplitude and phase of the local continuous wave signal to provide an adjusted continuous wave signal, and sum the adjusted continuous wave signal with the modulated continuous wave signal.

17. The coherent backscatter system interrogator according to
claim 16 wherein the receiver is configured to match the amplitude of
the local continuous wave signal with the amplitude of an individual
modulated continuous wave signal.
18. The coherent backscatter system interrogator according to
claim 14 wherein the wireless continuous wave signal and the local
continuous wave signal have a common frequency, and the receiver is
configured to reduce the amplitude of the return link communications
at the common frequency.
19. A method of communicating in a backscatter system
comprising:
transmitting a forward link communication;
transmitting a wireless continuous wave signal;
receiving the forward link communication;
modulating the wireless continuous wave signal responsive to the
receiving the forward link communication, the modulating providing a
modulated continuous wave signal;
receiving the modulated continuous wave signal; and
reducing the amplitude of the modulated continuous wave signal.

- 20. The method according to claim 19 wherein the transmitting the wireless continuous wave signal comprises transmitting the wireless continuous wave signal at a frequency and the reducing comprises reducing the amplitude of the modulated continuous wave signal at the frequency.
- 21. The method according to claim 19 wherein the transmitting the wireless continuous wave signal comprises transmitting at a first frequency and the modulating comprises modulating the wireless continuous wave signal using a subcarrier signal having a second frequency.
- 22. The method according to claim 21 wherein the reducing comprises reducing the amplitude of the modulated continuous wave signal at the first frequency.
- 23. The method according to claim 19 wherein the transmittings individually comprise transmitting using an interrogator and the modulating comprises modulating using a radio frequency identification device.
- 24. The method according to claim 19 wherein the modulating comprises selectively reflecting the wireless continuous wave signal.

25. The method according to claim 19 further comprising
providing a local continuous wave signal and the reducing comprises
reducing the amplitude using the local continuous wave signal.
26. The method according to claim 25 wherein the reducing
comprises:
matching the amplitude of the local continuous wave signal with
he amplitude of the modulated continuous wave signal;
adjusting the phase of the local continuous wave signal following
he matching; and
summing the local continuous wave signal and the modulated
continuous wave signal following the adjusting.
27. The method according to claim 26 wherein the adjusting
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n the adjusting comprises searching for a phase which provides maximum reduction of the amplitude of the modulated continuous wave signal at a frequency of the wireless continuous wave signal.



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A backsdatter communications method comprising: 28.

transmitting a \forward link communication wireless continuous wave signal using an interrogator;

receiving the forward link communication using remote communication device;

communicating a return link communication comprising a modulated continuous wave signal responsive to the receiving the forward link communication, the communicating including modulating the wireless continuous wave signal using the remote communication device;

receiving the modulated \ continuous wave signal using interrogator; and

reducing the amplitude of the modulated continuous wave signal using the interrogator.

- 29. The according \ to claim wherein the method 28 communicating comprises reflecting the \wireless continuous wave signal using a subcarrier signal.
- 30. according to \ claim 28 wherein the method communicating comprises modulating the wireless continuous wave signal providing a carrier component and side band components.
- The method according to claim 30 wherein the reducing 31. comprises reducing the amplitude of the carrier component.

- 32. The method according to claim 31 wherein the reducing comprises substantially maintaining the amplitude of the side band components during the reducing.
- 33. The method according to claim 28 wherein the transmitting comprises transmitting the wireless continuous wave signal at a frequency and the reducing comprises reducing the amplitude of the modulated continuous wave signal at the frequency.
- 34. The method according to claim 28 wherein the receiving the forward link communication comprises receiving using a radio frequency identification device.
- 35. The method according to claim 28 wherein the transmitting comprises transmitting radio frequency signals.
- 36. The method according to claim 28 further comprising providing a local continuous wave signal and the reducing comprises reducing using the local continuous wave signal.

31. A coherent backscatter communication method comprising:
transmitting a wireless forward link communication;
transmitting a continuous wave signal;
providing the continuous wave signal as a local signal;
receiving the wireless forward link communication;
communicating a wireless return link communication including
modulating the continuous wave signal following the receiving;
receiving the wireless return link communication; and
reducing the amplitude of the wireless return link communication
using the local signal.
38. The method according to claim 37 wherein the
communicating comprises reflecting the transmitted continuous wave
signal.
39. The method according to claim 37 wherein the
communicating comprises modulating the continuous wave signal providing
a carrier component and side band components.
40. The method according to claim $\sqrt{39}$ wherein the reducing
comprises reducing the amplitude of the carrier component.
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- 41. The method according to claim 40 wherein the reducing comprises substantially maintaining the amplitude of the side band components during the reducing.
- 42. The method according to claim 37 wherein the transmitting a continuous wave signal comprises transmitting a continuous wave signal having a frequency and the reducing comprises reducing the amplitude of the modulated continuous wave signal at the frequency.
- 43. The method according to claim 37 wherein the receiving the wireless forward link communication comprises receiving using a radio frequency identification device.
- 44. The method according to claim 37 wherein the transmittings individually comprise transmitting radio frequency signals using an interrogator.



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A method of communicating within a coherent backscatter communication system, the method comprising:

outputting a forward link communication;

outputting a witeless continuous wave signal;

providing a local continuous wave signal;

communicating a modulated continuous wave signal responsive to the outputting the forward link communication;

receiving the modulated continuous wave signal; and

reducing the amplitude of the modulated continuous wave signal including:

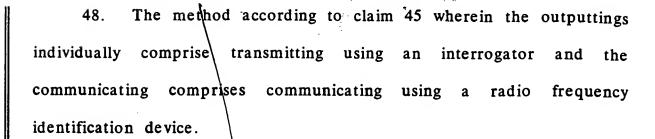
matching the amplitude of the local continuous wave signal with the amplitude of the received modulated continuous wave signal;

adjusting the phase of the local continuous wave signal following the matching providing an adjusted continuous wave signal; and

summing the adjusted continuous wave signal with the modulated continuous wave signal

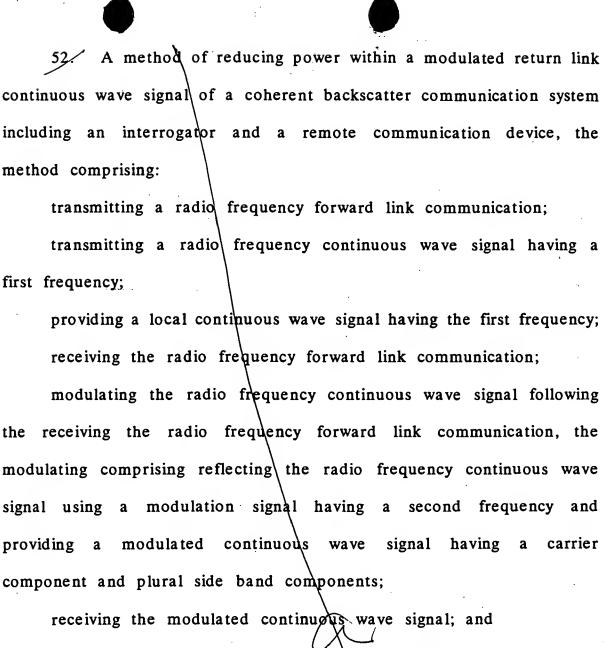
The method according to claim 45 wherein the adjusting 46. comprises searching for a phase which provides maximum reduction of the amplitude of the modulated continuous wave signal at a frequency of the wireless continuous wave signal.

47. wherein the The method according to ' claim 45 communicating comprises reflecting the wireless continuous wave signal.



- 49. The method according to claim 45 wherein the communicating comprises modulating the continuous wave signal providing a modulated continuous wave signal having a carrier component and side band components.
- 50. The method according to claim 49 wherein the reducing comprises reducing the amplitude of the carrier component.
- 51. The method according to claim 50 further comprising substantially maintaining the amplitude of the side band components during the reducing.

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receiving the modulated continuous wave signal; and reducing the amplitude of the carrier component of the modulated continuous wave signal including:

matching the amplitude of the local continuous wave signal with the amplitude of the modulated continuous wave signal;

adjusting the phase of the local continuous wave signal following the matching; and

summing the local continuous wave signal and the modulated continuous wave signal following the adjusting.



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